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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/464,297	12/15/1999	SHELDON ARONOWITZ	99-039	7342

24319 7590 10/24/2002

LSI Logic Corporation
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Milpitas, CA 95035

EXAMINER

BROWN, CHARLOTTE A

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 10/24/2002

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/464,297

Applicant(s)
Aronowitz et al.

Examiner
Charlotte Brown

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Sep 25, 2002
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-24 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other:

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DETAILED ACTION

1. Applicant has provided evidence in this file showing that the invention was owned by, or subject to an obligation of assignment to, the same entity as LSI Logic Corporation at the time this invention was made. Accordingly, Puchner et al. (US 6,156,620) is disqualified as prior art through 35 U.S.C. 102(e), (f) or (g) in any rejection under 35 U.S.C. 103(a) in this application. However, this applied art additionally qualifies as prior art under another subsection of 35 U.S.C. 102 and accordingly is not disqualified as prior art under 35 U.S.C. 103(a).

Applicant may overcome the applied art either by a showing under 37 CFR 1.132 that the invention disclosed therein was derived from the inventor of this application, and is therefore, not the invention "by another", or by antedating the applied art under 37 CFR 1.131.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 4-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Puntambekar et al. (US 5,714,037).

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Puntambekar discloses a method for improving adhesion between various materials utilized in the fabrication of integrated circuits. A plasma etcher is provided. A silicon oxide film is provided over the substrate. The surface of the silicon oxide film is treated with a nitrogen plasma in a reactive ion etching mode in a plasma etcher. The nitrogen treatment is a two-step process. Step 1 is an initialization step necessary to strike the plasma. In Step 2, the silicon dioxide film is treated with 100% nitrogen plasma at a flow rate of approximately 200 sccm in a plasma etcher operating at a high DC bias at approximately 950 volts or greater. This reads on the applicant's limitation of maintaining a bias on an electrode in the etching chamber during the exposure of the oxide surface to the nitrogen plasma to control the flow of components of the nitrogen plasma toward the substrate. The optional parameters of the etcher can be varied. During the treatment, the temperature of the lower electrode of the etcher is maintained in the range of 35-38°C and the temperature of the upper electrode is maintained around approximately 20°C. The parameters for the etcher are set forth in Table 1. Table 1 shows that the etcher maintains an rf power of 400 WT. This reads on the applicant's limitation of maintaining an rf bias on the semiconductor substrate during the exposure of the oxide surface to a remote nitrogen plasma.

Although Puntambekar does not teach a method whereby a fixed thickness of silicon oxide will be removed from the oxide surface with the oxide thickness removed dependent upon the power level of the bias on the electrode in the etching chamber, he does teach that the process conditions can be varied for maintaining the rf bias power for during the exposure of the

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semiconductor substrate to a nitrogen plasma (Column 4, lines 23-25). It is the examiner's position that a person having ordinary skill in the art would have found it obvious to modify Puntambekar by varying the power level of the rf bias to remove a fixed thickness of silicon oxide in order to achieve a reasonable expectation of success.

4. Applicant's arguments filed September 25, 2002 have been fully considered but they are not persuasive.

In traversing the rejection based on Puntambekar, the applicant states that the Puntambekar uses a high voltage DC bias instead of an rf bias and therefore teaches away from the claimed invention. This point is not accepted since Puntambekar teaches that an rf power of 400 WT is maintained during the plasma etching of a silicon oxide layer (See Table 1). Therefore, this reads on the applicant's limitation of maintaining rf bias on a semiconductor substrate.

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. (US 6,136,211)

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Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


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7. Any inquiry concerning this communication from the Examiner should be directed to Charlotte A. Brown whose telephone number is (703) 305-0727. The Examiner can normally be reached during the hours of 9:00AM to 6:30PM.

The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

CAB

October 23, 2002


BENJAMIN L. UTECH
SUPERVISORY PATENT EXAMINER
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